

بخش ۷-۱- تکینگیها

مسائل صفحه ۵۴۴

۷-۱-۱ بسط سری لوران تابع $f(z)$ نشان می‌دهد که این تابع یک قطب مرتبه m در $Z = Z_0$ دارد نشان دهید که a_{-1} ضریب $(z - z_0)^{-1}$ از رابطه زیر بدست می‌آید.

$$a_{-1} = \frac{1}{(m-1)!} \frac{d^{m-1}}{dz^{m-1}} \left[(z - z_0)^m f(z) \right]_{z=z_0}$$

که اگر این قطب یک قطب ساده ($m=1$) باشد خواهیم داشت

$$a_{-1} = \left[(z - z_0) f(z) \right]_{z=z_0}$$

این معادله برای a_{-1} در تعیین مانده‌ای که در بخش بعد در قضیه مانده‌ها بکار می‌رود بسیار سودمند است.

$$f(z) = \sum_{n=-\infty}^{\infty} a_n (z - z_0)^n \quad f(z) = \frac{a_m}{(z - z_0)^m} + \frac{a_{m-1}}{(z - z_0)^{m-1}} + \dots + \frac{a_{-1}}{(z - z_0)^1} \quad \text{کحل}$$

طرفین را در $(z - z_0)^m$ ضرب می‌کنیم.

$$(z - z_0)^m f(z) = a_m + a_{m-1} (z - z_0) + \dots + a_{-1} (z - z_0)^{m-1} + \dots$$

حال مشتق‌گیری می‌کنیم

$$\frac{d^{m-1}}{dz^{m-1}} \left[(z - z_0)^m f(z) \right] = (m-1)! a_{-1} \Rightarrow$$

$$a_{-1} = \frac{1}{(m-1)!} \frac{d^{m-1}}{dz^{m-1}} \left[(z - z_0)^m f(z) \right]$$

۷-۱-۲ تابع $f(z)$ را می‌توان به کمک رابطه زیر نشان داد.

$$f(z) = \frac{f_1(z)}{f_2(z)}$$

که در آن $f_1(z)$ و $f_2(z)$ تحلیلی‌اند. $f_2(z)$ در مخرج در $z = z_0$ صفر می‌شود از اینجا پی می‌بریم که $f(z)$ در $z = z_0$ یک قطب دارد. ولی $f_1(z) \neq 0$ و $f_2'(z_0) \neq 0$ نشان دهید که a_{-1} ضریب $(z - z_0)^{-1}$ در بسط لوران تابع $f(z)$ به ازای $z = z_0$ از رابطه زیر بدست می‌آید.

$$a_{-1} = \frac{f_1(z_0)}{f_2'(z_0)}$$

این نتیجه به قضیه بسط هویساید در بخش ۱۵-۱۲ می‌انجامد.

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Condition Monitoring of Machinery in Non-Stationary Operations Tahar Fakhfakh,Walter Bartelmus,Fakher Chaari,Radoslaw Zimroz,Mohamed Haddar,2012-03-19 Condition monitoring of machines in non stationary operations CMMNO can be seen as the major challenge for research in the field of machinery diagnostics Condition monitoring of machines in non stationary operations is the title of the presented book and the title of the Conference held in Hammamet Tunisia March 26 28 2012 It is the second conference under this title first took place in Wroclaw Poland March 2011 The subject CMMNO comes directly from industry needs and observation of real objects Most monitored and diagnosed objects used in industry works in non stationary operations condition The non stationary operations come from fulfillment of machinery tasks for which they are designed for All machinery used in different kind of mines transport systems vehicles like cars buses etc helicopters ships and battleships and so on work in non stationary operations The papers included in the book are shaped by the organizing board of the conference and authors of the papers The papers are divided into five sections namely Condition monitoring of machines in non stationary operations Modeling of dynamics and fault in systems Signal processing and Pattern recognition Monitoring and diagnostic systems Noise and vibration of machines The presented book gives the back ground to the main objective of the CMMNO 2012 conference that is to bring together scientific community to discuss the major advances in the field of machinery condition monitoring in non stationary conditions

Mathematical Methods for Physicists George Brown Arfken,Hans-Jurgen Weber,2001 This volume contains the essential mathematical tools and techniques used to solve problems in physics A useful textbook for all serious undergraduate students of physics This fifth edition has a new art programme throughout the book additional new and improved exercises updated references for computational techniques for using Numerical Recipes and Mathematica TM and there is a reference compendium for important mathematical methods used in physics The British National Bibliography Arthur James Wells,1996 *Archives of Acoustics Quarterly* ,2016 *Library Journal* Melvil Dewey,Richard Rogers Bowker,L. Pylodet,Charles Ammi Cutter,Karl Brown,Bertine Emma Weston,Helen E. Wessells,1966 Includes beginning Sept 15 1954 and on the 15th of each month Sept

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